

**CLAIMS**

1. A method for selecting one of a plurality of data sources as a source of data,  
wherein the data sources are apportioned into a first types of data source and a  
second type of data source, the method comprising the steps of:  
providing a vector for each one of the plurality of data sources, the vector  
comprising a series of N bits, where each bit corresponds to one of N time slots,  
each bit representing whether the associated one of the plurality of data sources is  
assigned to the corresponding time slot;  
determining, for each time slot, a slot style of the time slot; and  
selecting, at each time slot, one of the plurality of data sources as the  
source of data, the step of selecting operating in response to the slot style of the  
time slot.
2. The method according to claim 1, wherein the step of selecting further operates in  
response to a value of each bit associated with the time slot from each vector of  
the plurality of data vectors.
3. The method according to claim 1, wherein the value of each bit associated with  
the time slot from each vector of the plurality of vectors indicates whether the  
associated data source is assigned to the time slot, and wherein the step of  
selecting further operates in response to whether an assigned data source is ready.
4. The method according to claim 3, wherein the first type of data source is a priority  
queue, and wherein the step of selecting selects a highest priority queue that is  
assigned to the time slot and is ready.
5. The method according to claim 4, wherein the second type of data source is a  
balanced bandwidth queue, a subset of the plurality of data sources are balanced  
bandwidth queues, and at least one of the balanced bandwidth queues is assigned

to the time slot, wherein the step of selecting selects the balanced bandwidth queue if the balanced bandwidth queue is ready and if no assigned priority queue is ready.

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6. The method according to claim 5, wherein a Some Balanced Bandwidth queue indicator is provided to indicate whether one of the plurality of data sources.

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7. The method according to claim 6, further comprising the step of advancing the time slot responsive to no assigned priority queue being ready, the assigned balanced bandwidth queue not being ready and the Some Balanced Bandwidth queue indicator being set.

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8. The method according to claim 3, further comprising a third type of data source, wherein the third type of data source is a best effort queue, and wherein the step of selecting selects a best effort queue as the source of data for a time slot when none of the plurality of data queues assigned to the time slot are of the first data type or the second data type.

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9. A data structure for storage in a computer readable medium on a device, the data structure for use in selecting one of a plurality of inputs as an output, the data structure comprising:

for each one of the plurality of inputs:

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a vector having a series of N bits, each bit corresponding to a time slot for transmission of the output for indicating whether the input is assigned to the respective time slot; and

a style field, for indicating a style of the input, wherein the style is selected from at least two styles.

10. The data structure according to claim 9, further comprising, for each one of the plurality of inputs, a credit field, for indicating a credit associated with the respective input, wherein the credit is used in conjunction with the style field for determining whether the respective input is permitted to transmit if it is assigned to the slot.
11. The data structure of claim 9, further comprising, for each one of the plurality of inputs, a slot style vector, the slot style vector comprising N bits, each bit corresponding to the time slot for indicating a type of the time slot.
12. The data structure of claim 9, further comprising, for each one of the plurality of inputs, a ready bit for indicating whether the associated input is ready to transmit to the output.
13. A selector for selecting one of a plurality of inputs to provide an output , the selector comprising:
- a control data structure comprising, for each one of the plurality of inputs:
    - a vector having a series of N bits, each bit corresponding to one of a plurality of time slots, for indicating whether the input is assigned to the respective time slot for transmission;
    - a style field, for indicating a style of the input, wherein the style is selected from at least two styles; and
    - a slot style vector, the slot style vector comprising N bits, each bit corresponding to one of the plurality of time slots, for indicating a type of the time slot;
  - means, responsive to the vector, the style field and the slot style vector, for selecting one of the plurality of inputs to provide an output for each time slot. .

14. The selector of claim 13, wherein the means for selecting further operates in response to the style fields associated with each of the plurality of inputs.

15. The selector of claim 13, wherein the control structure further includes a ready bit for each input, for indicating whether each input is ready to transmit to the output, wherein the means for selecting further operates in response to the ready bit of each input.

16. A queueing system comprising:

a plurality of queues, each queue having a type associated therewith;

a selector, coupled to the plurality of queues, the selector for selecting one of the plurality of queues to provide data to an output, the selector comprising a control structure including a vector comprising a number of bits corresponding to a number of time slots, wherein each of the time slots has a type associated therewith, wherein a set of the plurality of queues are assigned to each of the time slots, and wherein the selector selects one of the plurality of queues to provide an output for each time slot based on the type of the each time slot and the type of the queue.

17. The queueing system of claim 16, further comprising a rate limiter disposed between the plurality of queues and the selector.

18. The queueing system of claim 16, wherein the plurality of queues comprises a plurality of priority queues and a plurality of balanced bandwidth queues, wherein the selector further comprises an indicator for indicating that at least one of the plurality of the balanced bandwidth queues is ready to transmit data.

19. The queueing system of claim 18, wherein the selector operates to select a priority queue if the priority queue is ready and assigned.

20. The queueing system of claim 19, wherein the selector operates to select a priority queue if the priority queue is ready but not assigned, and the associated time slot type is a priority time slot type.

21. The queueing system of claim 19, wherein the selector operates to select a balanced bandwidth queue if the assigned priority queue is not ready, and the balanced bandwidth queue is assigned and ready.

22. The queueing system of claim 21, wherein the selector operates to advance the time slot if the assigned priority queue is not ready, and the balanced bandwidth queue is assigned but not ready, and the indicator is set to indicate that at least one of the plurality of balanced bandwidth queues is ready.

23. A network line card comprising:

an ingress data path for forwarding a packet from a device to a fabric;  
an egress data path for forwarding a packet from a fabric to a device, the egress data path comprising a queueing system, the queueing system comprising:

a plurality of queues, each queue having a type associated therewith;

a selector, coupled to the plurality of queues, the selector for selecting one of the plurality of queues to provide data to an output, the selector comprising a control structure including a vector comprising a number of bits corresponding to a number of time slots, wherein each of the time slots has a type associated therewith, wherein a set of the plurality of queues are assigned to each of the time slots, and wherein the selector selects one of the plurality of queues to provide an output for each time slot based on the type of the each time slot and the type of the queue.

24. The network line card of claim 23, wherein the queueing system further comprises a rate limiter disposed between the plurality of queues and the selector.

25. The network line card of claim 23, wherein the plurality of queues comprises a plurality of priority queues and a plurality of balanced bandwidth queues, wherein

the selector further comprises an indicator for indicating that at least one of the plurality of the balanced bandwidth queues is ready to transmit data.

5        26.    The network line card of claim 25, wherein the selector operates to select a priority queue if the priority queue is ready and assigned.

27.    The network line card of claim 25, wherein the selector operates to select a priority queue if the priority queue is ready but not assigned, and the associated time slot type is a priority time slot type.

10       28.    The network line card of claim 27, wherein the selector operates to select a balanced bandwidth queue if the assigned priority queue is not ready, and the balanced bandwidth queue is assigned and ready.

15       29.    The network line card of claim 28, wherein the selector operates to advance the time slot if the assigned priority queue is not ready, and the balanced bandwidth queue is assigned but not ready, and the indicator is set to indicate that at least one of the plurality of balanced bandwidth queues is ready.